

CLAIMS

[0078] We claim as our invention:

1. A method of determining the spatial location of an object in question within a containing space, comprising:

 defining a containing space;

 identifying an object in question within the containing space;

 dividing the containing space into a plurality of parent spaces; and,

 for each of the parent spaces, iteratively repeating a query process, comprising:
 - i) querying the parent space to determine if the object in question is within the parent space;
 - ii) if the object in question is completely within or completely outside the parent space, returning the result to the containing space; and
 - iii) if the object in question is partially within the parent space, subdividing the parent space into a plurality of child spaces, and iteratively repeating the query process for each of the child spaces, wherein each child space is treated as a parent space.
2. The method of Claim 1, wherein the step of querying the parent space to determine if the object in question is within the parent space further comprises defining a sphere around the object in question and determining if the sphere is within the parent space.
3. The method of Claim 1, wherein the step of querying the parent space to determine if the object in question is within the parent space further comprises defining a circle around the object in question and determining if the sphere is within the parent space.
4. A method of determining the spatial location of an object in question within a containing space, comprising:

 defining a containing space;

identifying an object in question within the containing space;

dividing the containing space into a plurality of parent spaces; and,

for each of the parent spaces, iteratively repeating a query process, comprising:

- i) querying the parent space to determine if the parent space is within the object question;
- ii) if the parent space is completely within or completely outside the object in question, returning the result to the containing space; and
- iii) if the parent space is partially within the object in question, subdividing the parent space into a plurality of child spaces, and iteratively repeating the query process for each of the child spaces, wherein each child space is treated as a parent space.

5. The method of Claim 1, wherein the step of querying the parent space to determine if the parent space is within the object in question further comprises defining a sphere around the object in question and determining if the parent space is within the sphere.

6. The method of Claim 1, wherein the step of querying the parent space to determine if the parent space is within the object in question further comprises defining a circle around the object in question and determining if the parent space is within the sphere.

7. A method of determining the spatial location of an object in question within a containing space, comprising:

defining a containing space;

identifying an object in question within the containing space;

dividing the containing space into a plurality of parent spaces; and,

for each of the parent spaces, iteratively repeating a query process, comprising:

- i) querying the object in question to determine if the parent space is within the object question;
- ii) if the parent space is completely within or completely outside the object in question, returning the result to the containing space; and

- iii) if the parent space is partially within the object in question, subdividing the parent space into a plurality of child spaces, and iteratively repeating the query process for each of the child spaces, wherein each child space is treated as a parent space.

- 8. The method of Claim 1, wherein the step of querying the object in question to determine if the parent space is within the object in question further comprises defining a sphere around the object in question and determining if the parent space is within the sphere.
- 9. The method of Claim 1, wherein the step of querying the parent space to determine if the parent space is within the object in question further comprises defining a circle around the object in question and determining if the parent space is within the sphere.